

REMARKS

I. Status of Present Application

Prior to the entry of this amendment, Claims 1, 9, 12, 14, 15, and 19-49 were pending in this application. By this amendment, Applicant has canceled Claims 14, 15, 19-26, 28, 29, 30, 33, and 41-44; amended Claims 1, 9, 12, 27, 31, 35, 36, 45, 46, 47, and 48; and added new Claims 50-53. Applicant respectfully requests examination and reconsideration of Claims 1, 9, 12, 14, 15, 27, 28, 31, 32, 34-40, and 45-53.

In the October 18, 2005 action, the Office objected to Claims 36, 37, and 46, but indicated that the claims would be allowable if rewritten in independent form. In response, the Applicant has rewritten Claim 36 in independent form. Claim 37 depends from Claim 36. Claim 46 has also been rewritten in independent form. Therefore, Claims 36, 37, and 46 are allowable, and Applicant requests notification of the same.

Claims 1, 9, 12, 14, 15, 26-28, 31-35, 38-40, and 45 stand rejected as being unpatentable over U.S. Patent No. 6,312,123, issued to Codos et al. (the “Codos reference”), in view of other references. The Applicant addresses these rejections in Section IV below.

II. Related Litigation and Supplemental Information Disclosure Statement

U.S. Patent No 6,755,518 (which issued as a result of the parent patent application of the present case (Serial No. 09/989,006) (hereafter the “Parent Application”) has been asserted by Applicant in a lawsuit filed in the U.S. District Court for the Eastern District of Missouri, case no. 4:05-CV-00788-CPD. The defendant in that case, VUTEk, Inc., recently disclosed certain documents that are alleged to be prior art. Applicant has submitted this alleged prior art to the Office in a separate Information Disclosure Statement. In several instances, Applicant believes that the alleged prior art is cumulative to art already of record. However, since the law related to Applicant’s duty of disclosure requires Applicant to err on the side of disclosure rather than withholding, *LNP Eng’g Plastics, Inc. v. Miller Waste Mills, Inc.*, 275 F.3d 1347 (Fed Cir. 2001), Applicant is submitting all of the references it has received from VUTEk, Inc. to the Office for independent evaluation by the Office.

III. Interview Summary

On February 1, 2006, Applicant conducted an interview with the Office regarding the above-identified application. The interview was conducted in person. The following individuals were present during the interview.

Representing the Office: Examiner Ly T. Tran and Primary Examiner Manish S. Shah

Representing the Applicant: Attorney of Record Derek C. Stettner

Applicant initiated the interview to discuss the Office action dated October 18, 2005.

During the interview the Applicant expressed its opinion that the Codos reference taught a two-stage process that uses UV and a downstream, hot-air dryer and that it would not be obvious to one of ordinary skill in the art to use cold UV (which in one form is adapted to remove at least some heat from the energy emitted by a curing lamp) because there is no material deformation in the fabric-curing process discussed in the Codos reference. The Office suggested canceling claims 14 and 15 and amending claim 9 to overcome the current rejection. The Office also indicated that a new search would be done.

In addition to the above, Applicant noted that it would be filing a supplemental information disclosure statement containing references that Applicant learned of as a result of the above noted lawsuit. Further, the Applicant noted that it reserves the right to attempt to disqualify the Codos reference as prior art in the future, if necessary.

IV. Section 103(a) Rejection of Claims 9, 12, 14, 27, 28, 31, 34, 35, 39, and 40

As noted, the Office suggested during the interview that certain amendments could be made to overcome the current rejection and Applicant has made those amendments. As noted above, the Applicant also explained that the Codos reference teaches away from the proposed combination.

The Office asserts that the Codos reference teaches at least one UV curing head on the carriage “sufficiently close to the ink jet print head and the UV curing head being configured to emit sufficient UV energy to cure the ink jetted onto the substrate, at least partially cure, a substrate formed of such material, so that the surface of the material being printed upon does not

move from the plane of printing.” The Office cites column 4, lines 53-58 and column 7, lines 14-15 in support of these assertions. Applicant has reviewed the text and has not found any portion that mentions UV curing in a manner so that “the surface of the material being printed upon does not move from the plane for printing.”

Rather, the cited portions of the Codos reference disclose that a UV lamp can be placed on the same carriage as the printhead, that the emission of UV light can be synchronized with the jetting of ink, and that a two-step curing process using UV and a downstream, hot-air dryer is carried out. None of this teaches or suggests the asserted emission of UV light so that the surface of the material being printed upon does not move from the plane of printing.

The Codos reference addresses a problem where if too much UV curing occurs too quickly, wicking of the ink into the fabric is eliminated. One solution proposed by Codos is that UV curing of at least about 90% be promoted and then heat be applied in a drying station. In other words, less than 100% UV curing is used in combination with heat or drying to cure the fabric. See, for example, col. 5, lines 4-34.

The Office admits that the Codos reference does not teach the use of cold UV. However, the Office asserts that U.S. Patent No. 4,340,893, issued to Ort (“the Ort reference”) teaches two dryers on the carriage and that it would be obvious to have a curing head moveable with the print head as taught by the Ort reference to “provide for bi-directional printing.” The Office continues its argument by noting that an article entitled “New Cold-Cure High-Performance UV Systems,” authored by P. Jackson (the “Jackson reference”) teaches using cold UV to cure ink and that it would be obvious to one of ordinary skill in the art to use cold UV to improve product quality. With due respect, the argument fails to support a proper rejection under Section 103.

The Codos reference notes that too full of a UV cure can eliminate wicking, but some wicking is desirable. As noted, a two-stage process is used to achieve a full cure of the ink, but avoid the problems of too much UV curing. It is also noteworthy that Codos already provides a solution to providing too much UV by stating that UV lamps at or below about 600 watts per linear inch produce suitable cures. In other words, cold UV lamps are not required to solve any problems with heat that might exist with the process taught by the Codos reference. Therefore, in light of the fact that no substrate deformation is addressed in the Codos reference and that

regular UV lamps can be used, there is no reason for someone of ordinary skill to combine cold UV with the teachings of the reference.

In the Parent Application, the Office made a similar argument with respect to the patentability of the claims in that application. In particular, the Office rejected certain claims in the Parent Application under 35 U.S.C. § 103(a) as being unpatentable over the Codos reference in view of the Ort reference and U.S. Patent No. 4,563,589, issued to Scheffer (the “Scheffer reference”).

In both the Parent Application and the present application, the Office relies on the Codos and Ort references in the same manner, for the same teachings. In the Parent Application, the Scheffer reference was relied upon to teach that cold UV curing lamps *per se* are not new. In the rejection made in the present application, the Office relies on the Jackson reference as teaching the use of cold UV to cure ink. In the present application, the Office goes on to say that “[s]ince Jackson teaches using cold UV to cure the ink . . . [i]t would have been obvious to one having ordinary skill in the art at the time the invention was made [to] modify [it] to use cold UV as taught by Jackson. The motivation of doing so is to improve product quality.”

However, the teachings of the Scheffer and Jackson references are similar; i.e., cold UV *per se* is not new. Therefore, in its present rejection, the Office has done nothing more than rehash a rejection which Applicant successfully overcame in an appeal that it filed in the Parent Application. Moreover, independent of the arguments made by Applicant in the Parent Application, the prior rejection in the Parent Application fails for the same reasons that the present rejection fails. As explained, there is no motivation to combine the Codos reference with references that teach cold UV.

For all the above reasons, the Office has failed to provide sufficient motivation for combining the teachings of the references. Therefore, the rejection of Claims 9, 12, 14, 27, 28, 31, 34, 35, 39, and 40 based on the Codos, Ort, and Jackson references should be withdrawn.

V. Section 103(a) Rejection of Claim 45

Claim 45 stands rejected as being unpatentable over the Codos reference in view of an article entitled “Taming UV Temperature” authored by Anon (the “Anon reference”). As noted

above, there is no motivation to make the proposed combination and the rejection of Claim 45 should be withdrawn.

VI. Section 103(a) Rejection of Claim 47

Claim 47 stands rejected as being unpatentable over the Codos reference in view of the Anon reference taken in combination with the Ort and Jackson references. Claim 47 is allowable for the same reasons Claim 45 is allowable.

VII. Section 103(a) Rejection of Claim 15

Claim 15 stands rejected as being unpatentable over the Codos reference in view of the Ort and Jackson references and U.S. Patent No. 5,864,352, issued to Aoki et al. (the “Aoki reference”). As noted above, there is no motivation to make the proposed combination and the rejection of Claim 15 should be withdrawn.

VIII. Section 103(a) Rejection of Claim 32

Claim 32 stands rejected as being unpatentable over the Codos reference in view of the Ort and Jackson references and U.S. Patent No. 5,447,758, issued to Pelletier (the “Pelletier reference”). As noted above, there is no motivation to make the proposed combination and the rejection of Claim 32 should be withdrawn.

IX. Section 103(a) Rejection of Claim 48

Claim 48 stands rejected as being unpatentable over the Codos reference in view of the Anon reference and U.S. Patent No. 5,896,154, issued to Mitani et al. (the “Mitani reference”). As noted above, there is no motivation to make the proposed combination and the rejection of Claim 32 should be withdrawn.

X. Section 103(a) Rejection of Claims 9, 14, 27, 28, 31, 34, 35, 39, and 40

Claims 9, 14, 27, 28, 31, 34, 35, 39, and 40 stand rejected as being unpatentable over the Codos reference in view of the Ort, Jackson, and Mitani references. As noted above, there is no motivation to make the proposed combination and the rejection of Claims 9, 14, 27, 28, 31, 34,

35, 39, and 40 should be withdrawn.

XI. New Amendments and New Claims 50-53

Although the current rejection fails for the reasons noted above, Applicant has made some amendments to the claims that further distinguish them from the cited art. For example, with respect to Claim 1, it now indicates that radiation is impinged without materially altering the predetermined distance between the substrate and the printhead while the substrate is under the printhead, and that a vacuum is applied to the substrate to help maintain the predetermined distance between the substrate and the printhead. The cited art does not disclose or suggest such a combination.

Regarding the new claims, Claim 50 recites, among other things “applying a vacuum to the substrate; … and directing UV energy from the cold UV assembly onto the substrate while the substrate is held by the vacuum to substantially cure the ink without impinging sufficient energy that would deform the substrate under the printhead so as to substantially change the distance between the printhead and the substrate.” The cited art does not disclose or suggest such a combination.

Claim 51 recites, among other things, “a printhead coupled to and movable with the printhead carriage to different positions with respect to the substrate; a vacuum table configured to hold a substrate in place via a vacuum and help maintain a distance between the substrate and the printhead; and a cold UV curing head coupled to and movable with the printhead carriage and configured to direct energy onto the surface of the substrate so as to substantially cure the jetted ink without impinging sufficient energy that would deform the substrate under the printhead so as to substantially alter the distance between the substrate and the printhead.” The cited art does not disclose or suggest the combination in Claim 51.

Claim 52 recites, among other things, “moving a printhead carriage having a printhead and cold UV source thereon approximately parallel to a substrate; dispersing UV curable ink from the printhead onto the substrate; emitting sufficient UV energy from the UV source onto the substrate to substantially cure the ink, while simultaneously a) filtering undesired energy emitted by the UV source so as to prevent the substrate from deforming to a level that would materially diminish print quality, and b) holding the substrate in place; and removing heat generated by the UV source with a cooling system.”

Claim 53 recites among other things,
a printhead carriage;
a printhead coupled to and moveable with the printhead carriage;
at least one UV curing assembly coupled to and moveable with the printhead carriage, the UV curing assembly having one or more filters configured to prevent at least a portion of undesired energy emitted from the UV curing assembly from contacting the substrate;
a vacuum table for assisting in holding the substrate down and in place; and
a cooling system to remove heat generated by the UV source,
wherein the printer is configured to substantially cure ink while maintaining a distance between the substrate and the printhead by emitting sufficient UV energy to substantially cure the ink dispersed onto the substrate, and filtering undesired energy emitted by the UV curing assembly.

The cited art does not teach or suggest the method or apparatus in Claims 52 and 53.

Therefore, the claims are allowable.

CONCLUSION

The Codos reference teaches away from the proposed combination and there is no motivation to make the proposed combination. Accordingly, entry of this Amendment, allowance of Claims 1, 9, 12, 14, 15, 27, 28, 31, 32, 34-40, and 45-53, and issuance of a Notice of Allowance are respectfully requested. The undersigned is available for telephone consultation at anytime during normal business hours.

Respectfully submitted,



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